

WHAT IS CLAIMED IS:

1. A driver for a motor to move an object, comprising:
 - a movement difference calculator that calculates a difference between an amount of movement of the object and a target value; and
 - 5 a motor controller that controls the motor so that the object moves at a constant velocity, based on the difference.
2. The driver according to claim 1, further comprising a pulse frequency calculator that calculates a pulse frequency for driving the motor, based on the difference and a reference pulse frequency,
 - 10 wherein
 - the motor is a pulse motor, and
 - the motor controller controls the pulse motor so that the object moves at a constant velocity, based on the pulse frequency calculated.
3. The driver according to claim 1, wherein
 - 15 the object is a rotor,
 - the amount of movement is an angular displacement of the rotor,
 - and
- 20 the motor controller controls the motor so that the rotor rotates at a constant angular velocity, based on the difference.
4. The driver according to claim 1, wherein
 - 25 the object is a drive rotor that turns a driven rotor through a belt that is wound around between the drive rotor and the driven rotor.

5. The driver according to claim 1, wherein
the object is a driven rotor that is turned through a belt that is
wound around between the driven rotor and a drive rotor, and
5 the drive rotor is turned by the motor.
6. The driver according to claim 1, wherein the object is a belt that
is wound around between a drive rotor and a driven rotor, and
the drive rotor is turned by the motor.
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7. The driver according to claim 1, wherein the pulse frequency
calculator includes a low-pass filter that shapes a waveform of the
difference.
- 15 8. The driver according to claim 1, wherein the pulse frequency
calculator includes a low-pass filter and a multiplier.
9. The driver according to claim 1, further comprising:
a movement measuring unit that measures the amount of
20 movement.
10. The driver according to claim 9, further comprising a resolution
of the movement measuring unit is greater than a double amplitude of a
main variation component of the object.

11. The driver according to claim 9, wherein the movement measuring unit is a rotary encoder.

12. The driver according to claim 9, wherein the movement
5 measuring unit is a linear encoder.

13. The driver according to claim 11, wherein
the object is a belt that is wound around between a drive rotor turned by the motor and a driven rotor, and
10 the rotary encoder is provided on the driven roller.

14. The driver according to claim 11, wherein
the object is a belt that is wound around between a drive rotor turned by the motor and a driven rotor, and
15 the rotary encoder is provided on the drive roller.

15. The driver according to claim 12, wherein
the object is a belt that is wound around between a drive rotor turned by the motor and a driven rotor, and
20 the linear encoder is provided on the belt.

16. An image forming apparatus comprising:
an image carrier;
a motor to move the image carrier;
25 a movement measuring unit that measures an amount of

- movement of the image carrier;
- a movement difference calculator that calculates a difference between the amount of movement and a target value; and
- a motor controller that controls the motor so that the image carrier moves at a constant velocity, based on the difference.
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17. The image forming apparatus according to claim 16, wherein the image carrier is a photosensitive drum.
- 10 18. The image forming apparatus according to claim 16, wherein the image carrier is a photosensitive belt.
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19. The image forming apparatus according to claim 16, wherein the image carrier is a transfer drum.
20. The image forming apparatus according to claim 16, wherein the image carrier is a transfer belt.
21. The image forming apparatus according to claim 16, wherein
- 20 the image carrier includes a plurality of image carriers that carry toner images of a plurality of colors, and
- the toner images are sequentially superposed on a belt-like image carrier to form a color image.

22. An image reading apparatus comprising:
- an object including an optical system for image reading;
 - a motor to move the object along a plane of a target to be read;
 - a movement measuring unit that measures an amount of
- 5 movement of the object;
- a movement difference calculator that calculates a difference between the amount of movement and a target value; and
 - a motor controller that controls the motor so that the object moves at a constant velocity, based on the difference.

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23. A method of driving a motor to move an object, comprising:
- measuring an amount of movement of the object;
 - calculating a difference between the amount of movement and a target value; and
- 15 controlling the motor so that the object moves at a constant velocity, based on the difference.

24. A computer program product for driving a motor to move an object, the computer program product including computer executable instructions stored on a computer readable medium, wherein the instructions, when executed by the computer, cause the computer to perform:
- measuring an amount of movement of the object;
 - calculating a difference between the amount of movement and a target value; and

controlling the motor so that the object moves at a constant velocity, based on the difference.